

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include changes to Figure 3. This sheet, which includes Figure 3, replaces the original sheet including Figure 3.

In order to comply with 37 CFR 1.83(a), Figure 3 has been amended to show a browser 61 included in CPU 60. Support for the amendment to Figure 3 is found at least at page 11, lines 20-21, page 12, lines 14-15, page 17, lines 3-4, and page 19, lines 19-21 and in the originally filed claims 1 and 8.

The attached sheets of drawings include changes to Figure 4. This sheet, which includes Figure 4, replaces the original sheet including Figure 4.

In order to comply with 37 CFR 1.83(a), Figure 4 has been amended to show a browser 74 included in A/V/D unit 70. Support for the amendment to Figure 4 is found at least at page 12, lines 16 -17, page 17, lines 3 – 4, and page 19, lines 19 – 21 and in the originally filed claim 18.

Attachement: Replacement Sheets

Annotated Sheets Showing Changes

REMARKS

Applicant(s) and applicant's attorney express appreciation to the Examiner for the courtesies extended during the recent interview held on April 14, 2005. The claim amendments made by this paper are consistent with the proposals discussed during the interview.¹ By this paper, claims 1, 8, 18, 23, and 27 have been amended. Accordingly, claims 1-32 are pending, of which system claims 1, 8, and 18 and method claim 26 are the independent claims at issue.

Applicants' invention is directed to set top boxes for receiving and processing digital data. As defined in independent claim 1, the set top box is comprised of a tuning component for receiving a digital transmission and producing at least one channel having digital data. An A/V/D unit is also provided that processes each at least one channel. Independent claim 1 further defines a processing component, including a browser for browsing interactive content, wherein the processing component solely provides control functionality and processor requirements for each component in the set top box. A unified memory, having access solely controlled by the processing component, satisfies the memory requirements of each component in the set top box. Lastly, the processing component is configured to dynamically use the unified memory for components of the set top box according to their respective needs.²

Independent system claim 8³ defines a set top box similar to the set top box defined in independent claim 1. However, claim 8 differs from claim 1 at least in that claim 8 defines one or more tuning and demodulating components and further includes a transport demultiplexor.

¹ The currently presented claim 1 differs from the claim 1 discussed in the interview in that the current presented claim 1 was further amended to better clarify the invention. Additional language was added to further define that the processing component "solely" provides control functionality and processor requirements for each component in the set top box. No other changes were made to the claim 1 discussed at the interview.

² Support for browsing interactive content can be found, for example, at page 11, lines 20-21. Support for a processor solely providing processor requirements can be found, for example, at page 5, lines 13-18 and at page 11, lines 23-24. Support for a processing component solely controlling memory access can be found, for example, at page 5, lines 19-21 and page 12, lines 6-7.

³ As defined in independent claim 8, a set top box comprises one or more tuning and demodulating components for tuning and demodulating one or more transport streams carrying digital data. Additionally, claim 8 defines a transport demultiplexor that demultiplexes transport streams to produce one or more channels. The set top box also comprises an A/V/D unit that processes digital data to decode video programming, audio programming, and processes interactive content of the one or more channels. Claim 8 further defines a unified memory and a processor that provides sole access to the unified memory. The processor also comprises a browser for browsing interactive content. The processor solely provides the processing requirements and solely controls unified memory access for each component of the set top box.

Independent claim 18⁴ defines another set top box similar to the set top boxes defined in claims 1 and 8. However, claim 18 differs from claims 1 and 8 at least in that claim 18 defines a tuning and demodulating component having a plurality of tuners and the A/V/D unit (as opposed to the processor) includes a browser.

In the office action, independent claims 1, 8, and 18 were all rejected using D'Luna as the primary reference (U.S. Pub. No. 2002/106018 A1)^{5 6}.

D'Luna is directed to a single chip set-top box system including components for processing compressed video signals. (Para. [0007]). As depicted in Figure 2, the single chip set top box includes at least three separate and distinct processors, graphics processor 102, transport processor 111, and CPU 114. Each of the processors independently controls its own access to memory controller 112 for accessing external memory 126 (as indicated by the arrows between 102, 111, and 114 and 112 respectively)). (Figure 2, and Paras. [0041], [0093], [0096], and [0107]). Some processors also utilize other internal memory. (Paras. [0050] and [0086]). Further, each of the processors provides processing functionality to at least one other component. (Figure 2). For example, graphics processor 102 provides processing requirements for Audio DACs 116, Video Encoder 118, and Analog Audio/Video Decoder 106 (120), transport processor 111 provides processor requirements to transceiver 104, and CPU 114 provides processor requirements to peripherals 110. (Paras. [0036], [0039], [0052]). Accordingly, a number of different processors provide processing requirements for other components and control access to (potentially different) portions of memory.⁷

⁴ As defined in independent claim 18, a set top box comprises a tuning and demodulating component having a plurality of tuners for producing at least one transport stream from a digital transmission. Claim 18 also defines a transport demultiplexor that selects a channel of related video packets, audio packets, and interactive content packets from each transport stream. The set top box also comprises an A/V/D unit including a browser that decodes video and audio packets and processing interactive content packets with the browser. Claim 18 further defines a unified memory that solely satisfies the memory components of components in the set top box. Lastly, the set top box defined in claim 18 comprises a processor that solely provides the processing requirements of components of the set top box and provides sole access to the unified memory for components of the set top box.

⁵ In the office action, claims 1 and 8 were rejected under 35 U.S.C. § 102(e) as being anticipated by D'Luna. Claim 18 was rejected under 35 U.S.C. § 103(a) as being unpatentable over D'Luna in view of Crosby (U.S. Pat. No. 5,933,192). With respect to claim 18, Crosby was cited for "a plurality of tuners . . . being operably connected with a corresponding demodulator."

⁶ Although the prior art status of the D'Luna is not being challenged at this time, Applicants reserve the right to challenge the prior art status of D'Luna at any appropriate time, should it arise. Accordingly, any arguments and amendments made herein should not be construed as acquiescing to any prior art status of D'Luna.

⁷ Of the other art of record, Crosby describes multiple processors that provide processing requirements for different functions. (Col. 2, ll. 63 – 65, Col. 3, ll. 46-50, and Col. 4, ll. 11 - 19). Likewise, Auld (U.S. Patent No. 6,526,583) describes multiple processors that provide processing requirements for different functions. (Col. 4, ll. 23 – 31).

D'Luna mentions that "in many embodiments such as web browsing or computer generated graphics, for example the graphical content is coded with square aspect ratio pixel sampling (for example 640.times.480 resolution) while the standard for digital video (ITU-R BT.601) specifies a pixel aspect ratio that is rectangular" (Para. [0114]). The graphics processor can adjust the different pixel ratios with no significant loss in quality of the graphics. (Para. [0114]). However, D'Luna is silent as to where a browser or browsing functionality can be implemented in set-top box system on a chip 100.⁸

However, as pointed out at the interview, none of the cited references or other prior art of record, either singly or in combination, anticipate or make obvious, Applicant's inventive set top box. In particular, none of the references of record anticipate or make obvious a set top box having a browser included a processor, wherein solely controls memory access of components in the set top box. In that regard, as noted by the Examiner in the interview summary with respect to claim 1, "The proposed amendment appears to overcome the rejection of record . . .". Additionally, none of the references of record anticipate or make obvious a set top box wherein a processor solely provides the processing requirements of each component in the set top box. In that regard, claim 1 further distinguishes over the cited references and other prior art of record.

Claim 8 distinguishes over the cited references and other prior art at least for the same reasons as claim 1.

Further, none of the references of record anticipate or make obvious a set top box having a browser included an A/V/D unit and also having a processor that solely provides the processing requirements for components of the set top box and solely controls memory access for components in the set top box. At least for these reasons, claim 18 also distinguishes over the cited references and other prior art.

MacInnis (U.S. Pat. Application No. 09/641,374 and U.S. Pat. No 6,853,385) also describes multiple processors that provide processing requirements for different functions. (Col. 1, l. 36 – Col. 2, l. 57). Further, although the prior art status of the Auld and MacInnis is not being challenged at this time, Applicants reserve the right to challenge the prior art status of Auld and MacInnis at any appropriate time, should it arise. Accordingly, any arguments and amendments made herein should not be construed as acquiescing to any prior art status of Auld and MacInnis.

⁸ Of the other art of record, MacInnis and LaJoie (U.S. Pat. No. 5,850,218) mention browsers. MacInnis describes that a high-level application tool, such as a browser, can create graphics data as graphics windows. (Col. 110, l. 67 – Col. 111, l. 5). MacInnis further describes a lower-level driver in communication with an IC chip loading the graphics windows into a unified external memory location. LaJoie describes that a browser can be executed to facilitate establishing a browsing session and can be downloaded to a set-top terminal (Col. 17, ll. 44 – 51). However, MacInnis and LaJoie are silent on where a browser or browsing functionality can be implemented in a set top box. MacInnis teaches away from including a browser directly in a processor at least in that high-level applications are typically not included in processors.

For at least these reasons Applicants respectfully submit that the cited art fails to anticipate or make obvious claims 1, 8, and 18. Favorable reconsideration and allowance over the prior art is thus respectfully requested.⁹

Moving to independent claim 27, independent claim 27 defines a method for processing a digital transmission to produce video and audio outputs. As defined in claim 27, a processor that solely provides the processing requirements for components of a set top box and solely controls access to a unified memory contained in the set top box dynamically allocates portions of the unified memory to other components based on their respective needs. Claim 27 then comprises tuning the received digital transmission to produce a transport stream having at least a portion of at least one channel encrypted. Claim 27 further includes demultiplexing the transport stream to produce the at least one channel and passing encrypted keys extracted from the at least one channel, through a conditional access, to a security system. Claim 27 further defines receiving decrypted keys, through the conditional access, from the security system. Lastly, claim 27 comprises processing the video packets, audio packets, and data packets contained in the at least one channel with an A/V/D unit to produce the video and audio outputs.

In the office action, claim 27 was rejected under 35 U.S.C. § 103(a) as being unpatentable over D'Luna in view of Chaney.

Chaney is directed to an access control system for signal processing applications having an IC or smart card that provides security control and data descrambling. (Abstract). As part of the access control system, a microcontroller 160 generates control signals to tune to a selected channel and monitors for the occurrence of errors in signals and controls the processing of errors. (Col. 4, ll. 29 – 46). Security controller 183 processes EMM and ECM data to provide access control functions, including entitlement management and key generation, and comprises a microprocessor. (Col. 5, l. 64 – Col. 6, l. 1). Microcontroller 160 and security controller 183 interoperate to process packet payloads (Col. 6, l. 64 – Col. 7, l. 14). Accordingly, processing requirements and memory access is spread across at least two separate processing components.

⁹ Various dependent claims depending from claims 1, 8, and 18, were rejected under 35 U.S.C. § 103(a) as being unpatentable over D'Luna in view of Chaney (U.S. Pat. No. 6,594,361), as being unpatentable over D'Luna in view of Auld, as being unpatentable over D'Luna in view of Crosby, and as being unpatentable over D'Luna in view of Crosby, and in further view of Letellier (U.S. Pat. No. 6,594,361). However, since each of the various dependent claims depend from one of the independent claims 1, 8, and 18, and thus inherent all the limitations of one of claims 1, 8, or 18, none of the cited references or other prior art of record, either singly or in combination, anticipate or make obvious any of these various dependent claims.

However, none of the cited references or other prior art of record, either singly or in combination, anticipate or make obvious, Applicant's inventive method for processing a digital transmission to produce video and audio outputs.¹⁰ In particular, none of the references of record anticipate or make obvious a processor that solely provides the processing requirements for components of a set top box and solely controls access to a unified memory contained in the set top box dynamically allocating portions of the unified memory to other components based on their respective needs. Thus, at least for these reasons, claim 27 distinguishes over the cited references or other prior art of record.

For at least these reasons Applicants respectfully submit that the cited art fails to anticipate or make obvious claim 27. Favorable reconsideration and allowance over the prior art is thus respectfully requested.

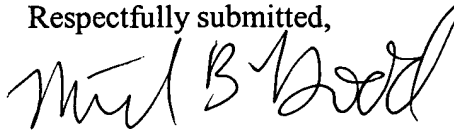
Lastly, the drawings were objected to under 37 CFR 1.83(a). More specifically, the office action indicates that the claimed "browser component" of claims 1, 8, and 18 must be shown or the features canceled from the claim(s). Accordingly, Figures 3 and 4 have been amended to show a browser. Corresponding references to the browsers in Figures 3 and 4 have been added to the specification. Support for the amended Figures and corresponding references in the specification is found in numerous locations in the specification and claims as previously indicated in the amendment to the drawings section of this response. No new matter is believed to have been entered as a result of the drawing and specification amendments. Accordingly, Examiner is requested to reconsider and withdraw this objection.

In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney.

¹⁰ Various dependent claims depending from claim 27 were also rejected under 35 U.S.C. § 103(a) as being unpatentable over D'Luna in view of Chaney and under 35 U.S.C. § 103(a) as being unpatentable over D'Luna in view of Chaney and in further view of Letellier. However, since each of the various dependent claims depend from independent claim 27, and thus inherent all the limitations of claim 27, none of the cited references or other prior art of record, either singly or in combination, anticipate or make obvious any of these various dependent claims.

Dated this 4th day of May, 2005.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael B. Dodd". The signature is fluid and cursive, with the first name "Michael" written in a larger, more prominent script than the last name "Dodd".

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Annotated Marked-up Drawings

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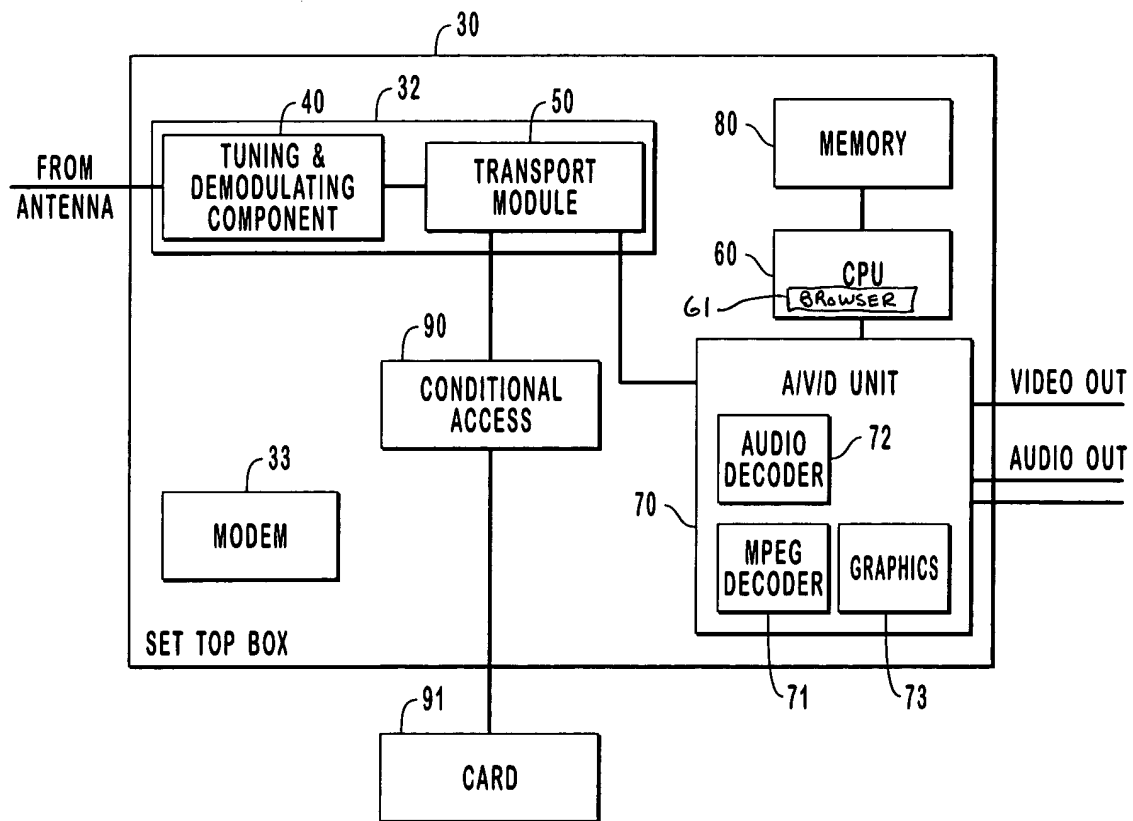


FIG. 3

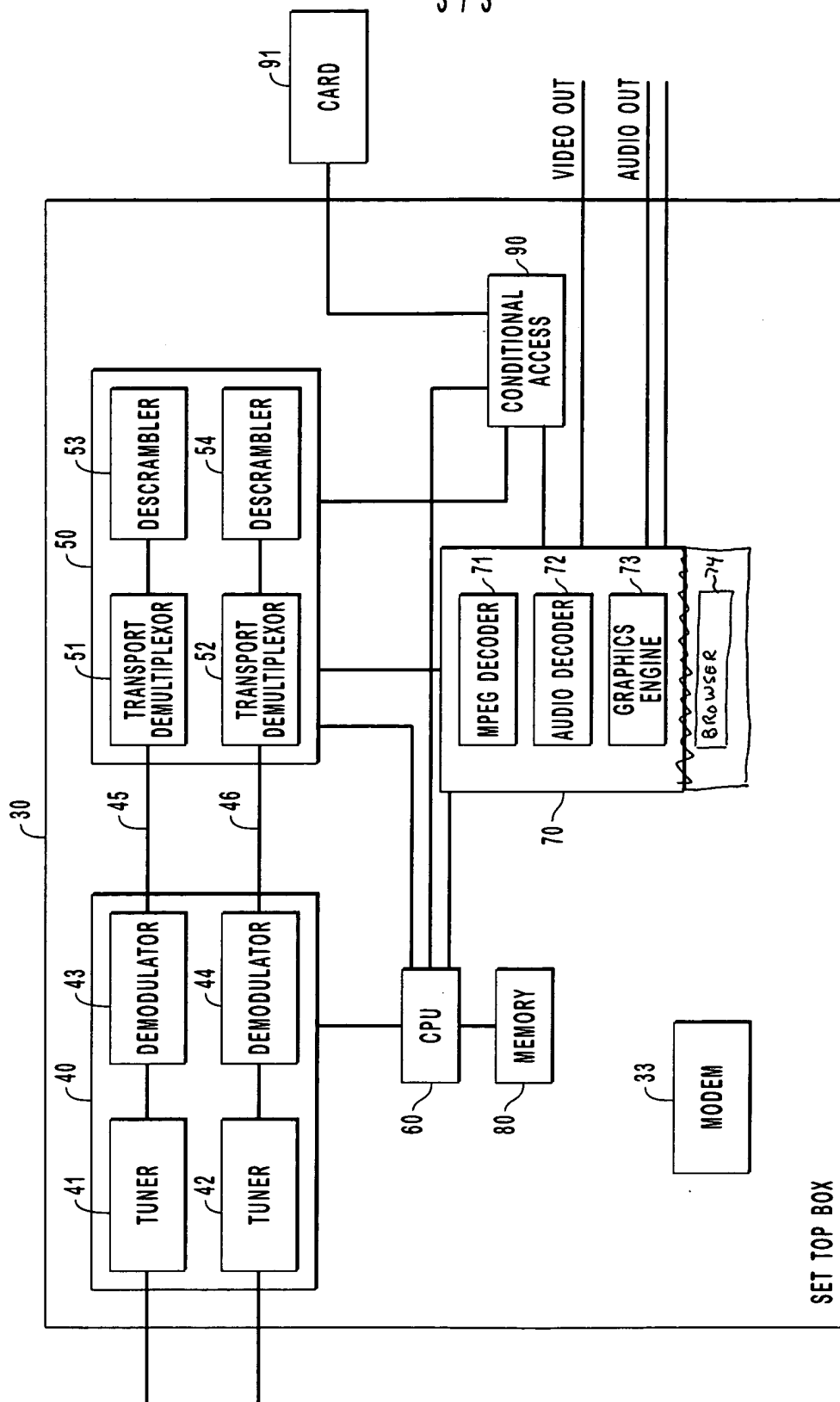


FIG. 4